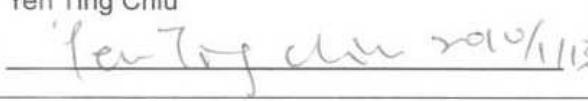
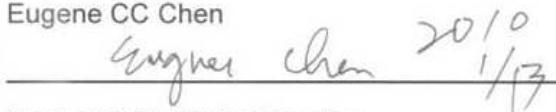


Model Name: T370HW03 VQ

Issue Date : 2011/1/25

()Preliminary Specifications
 (*)Final Specifications

Customer Signature	Date	AUO	Date
Approved By		Approval By PM Director Yen Ting Chiu 	
Note		Reviewed By RD Director Eugene CC Chen  Reviewed By Project Leader Sarah Ke 	
		Prepared By PM Eric YH Lin 	

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No		
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Record of Revision



1. General Description

This specification applies to the 37.0 inch Color TFT-LCD Module T370HW03 VQ. This LCD module has a TFT active matrix type liquid crystal panel 1,920x1,080 pixels, and diagonal size of 37.0 inch. This module supports 1,920x1,080 mode. Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 8-bit gray scale signal for each dot.

The T370HW03 VQ has been designed to apply the 8-bit 2 channel LVDS interface method. It is intended to support displays where high brightness, wide viewing angle, high color saturation, and high color depth are very important.

* General Information

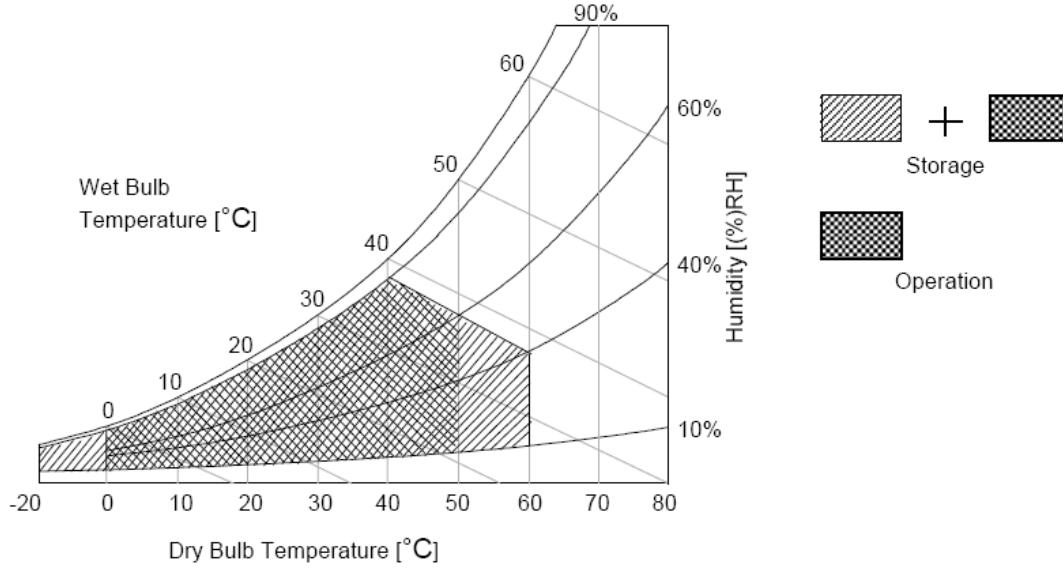
Items	Specification	Unit	Note
Active Screen Size	37.00	inch	
Display Area	885.6(H) x 498.15(V)	mm	
Outline Dimension	877(H) x 516.8 (V) x 46.5(D)	mm	D: front bezel to T-con cover
Driver Element	a-Si TFT active matrix		
Bezel Opening	939 (H) x 531 (V)	mm	
Display Colors	8 bit, 16.7M	Colors	
Number of Pixels	1,920x1,080	Pixel	
Pixel Pitch	0.4268 (H) x 0.4268(W)	mm	
Pixel Arrangement	RGB vertical stripe		
Display Operation Mode	Normally Black		
Surface Treatment	Anti-Glare, 3H		Haze=2%

2. Absolute Maximum Ratings

The followings are maximum values which, if exceeded, may cause faulty operation or damage to the unit

Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	V_{DD}	-0.3	14	V_{DC}	Note 1
Input Voltage of Signal	V_{in}	-0.3	4	V_{DC}	Note 1
BLU Input Voltage	V_{DDB}	-0.3	28	V_{DC}	Note 1
BLU Brightness Control Voltage	V_{dim}	-0.3	7	V_{DC}	Note 1

Note 1: Duration: 50 msec.



3. Electrical Specification

The T370HW03 VQ requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second input for BLU is to power inverter.

3.1 Electrical Characteristics

3.1.1: DC Characteristics

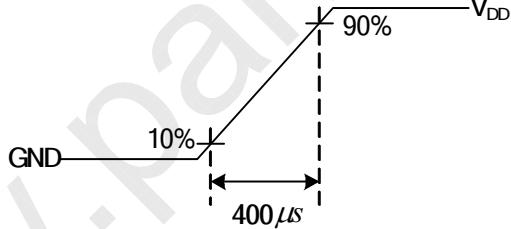
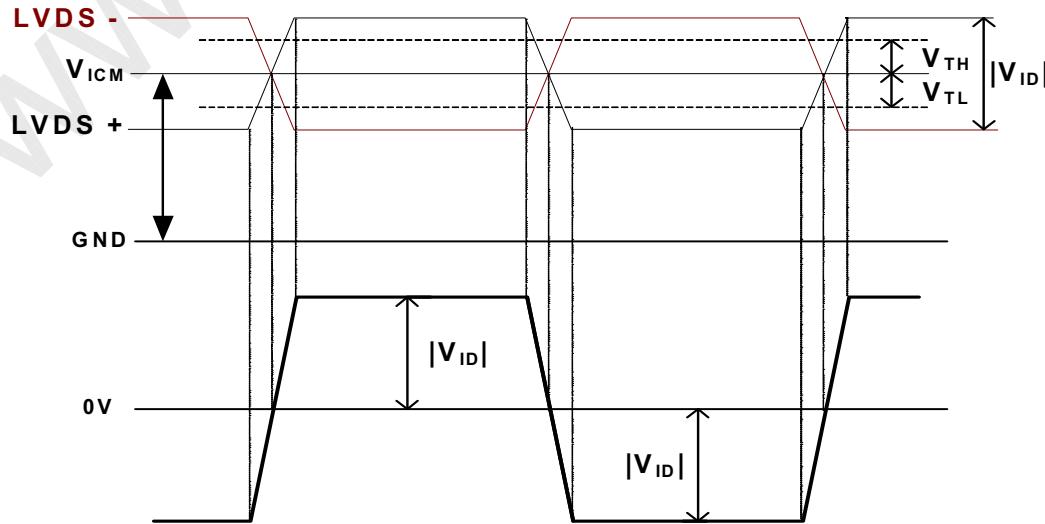
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max		
LCD						
Power Supply Input Voltage	V_{DD}	10.8	12	13.2	V_{DC}	
Power Supply Input Current	I_{DD}	--	0.93	1.023	A	1
Power Consumption	P_C	--	11.16	12.276	Watt	1
Inrush Current	I_{RUSH}	--	--	3	A	2
LVDS Interface	Input Differential Voltage	$ V_{ID} $	200	400	mV_{DC}	3
	Differential Input High Threshold Voltage	V_{TH}	+100	--	mV_{DC}	3
	Differential Input Low Threshold Voltage	V_{TL}	-300	--	mV_{DC}	3
	Input Common Mode Voltage	V_{ICM}	1.1	1.25	V_{DC}	3
CMOS Interface	Input High Threshold Voltage	V_{TH}	2.7	--	V_{DC}	4
	Input Low Threshold Voltage	V_{TL}	0	--	V_{DC}	4
Backlight Power Consumption	P_{BL}	81	90	99	Watt	
Life Time		50000			Hours	

3.1.2: AC Characteristics

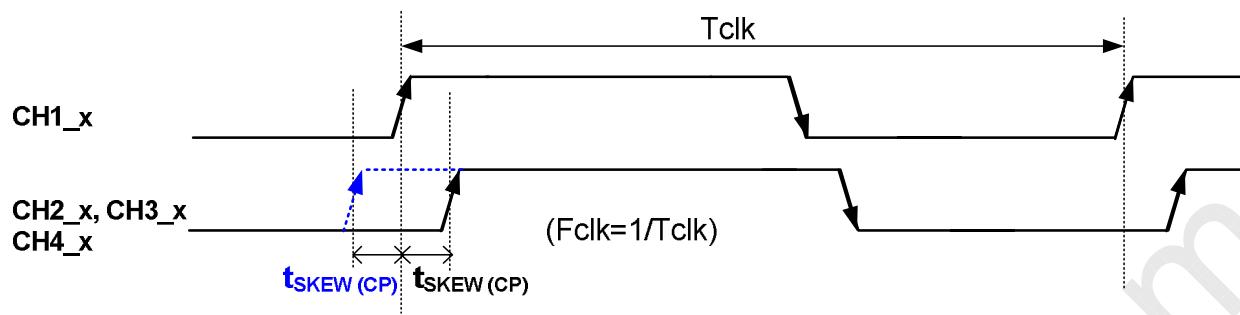
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max		
LVDS Interface	Input Channel Pair Skew Margin	$t_{SKEW} (CP)$	-500	--	+500	ps 5
	Receiver Clock : Spread Spectrum Modulation range	F_{clk_ss}	F_{clk} -3%	--	F_{clk} +3%	MHz 6
	Receiver Clock : Spread Spectrum Modulation frequency	F_{ss}	30	--	200	KHz 6
	Receiver Data Input Margin $F_{clk} = 85$ MHz $F_{clk} = 65$ MHz	t_{RMG}	-0.4 -0.5	--	0.4 0.5	ns 7

Note :
1. Test Condition:

- (1) $V_{DD} = 12.0V$
- (2) F_v = Type Timing, 60Hz, 120Hz or Other
- (3) F_{clk} = Max freq.
- (4) Temperature = 25 °C
- (5) Typ. Input current : White Pattern
Max. Input current: Heavy loading pattern defined by AUO
>> refer to "Section:3.3 Signal Timing Specification, Typical timing"

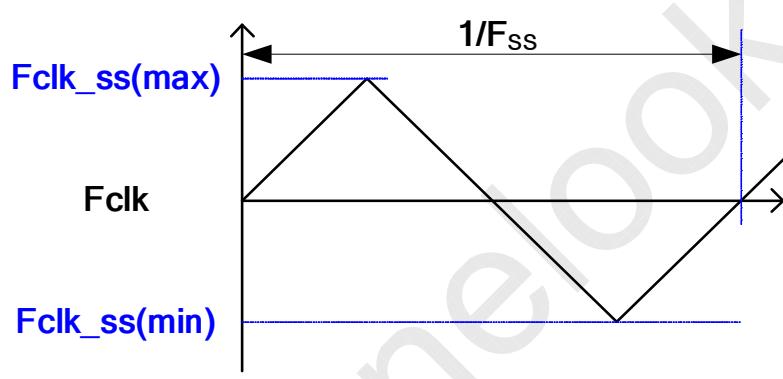
2. Measurement condition : Rising time = 400us

3. $V_{ICM} = 1.25V$


4. The measure points of V_{IH} and V_{IL} are in LCM side after connecting the System Board and LCM.
5. Input Channel Pair Skew Margin



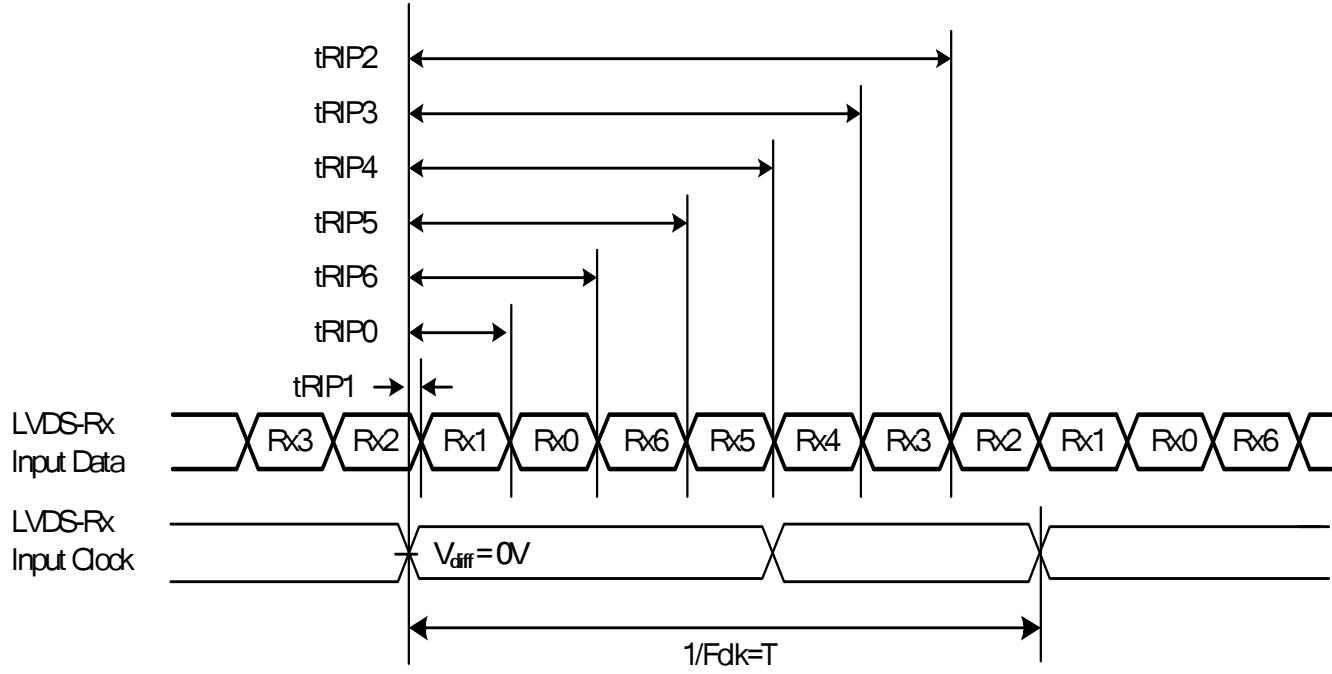
Note: $x = 0, 1, 2, 3, 4$

6. LVDS Receiver Clock SSCG (Spread spectrum clock generator) is defined as below figures



7. Receiver Data Input Margin

Parameter	Symbol	Rating			Unit	Note
		Min	Type	Max		
Input Clock Frequency	Fclk	Fclk (min)	--	Fclk (max)	MHz	T=1/Fclk
Input Data Position0	tRIP1	- tRMG	0	tRMG	ns	
Input Data Position1	tRIP0	T/7- tRMG	T/7	T/7+ tRMG	ns	
Input Data Position2	tRIP6	2T/7- tRMG	2T/7	2T/7+ tRMG	ns	
Input Data Position3	tRIP5	3T/7- tRMG	3T/7	3T/7+ tRMG	ns	
Input Data Position4	tRIP4	4T/7- tRMG	4T/7	4T/7+ tRMG	ns	
Input Data Position5	tRIP3	5T/7- tRMG	5T/7	5T/7+ tRMG	ns	
Input Data Position6	tRIP2	6T/7- tRMG	6T/7	6T/7+ tRMG	ns	





3.2 Interface Connections

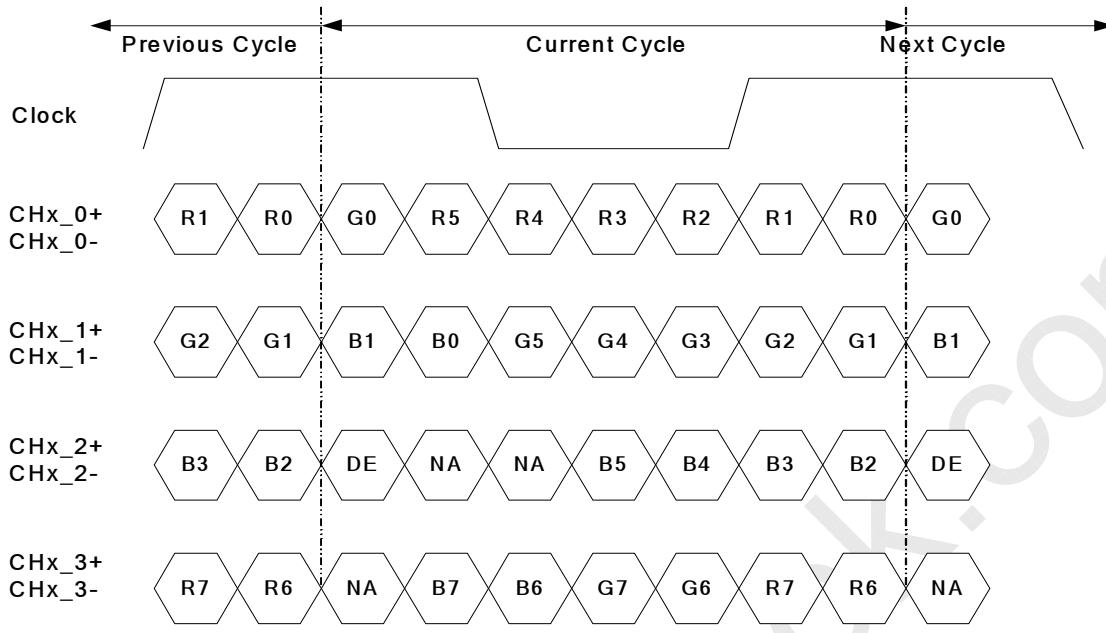
- LCD connector: 187059-51221 (P-TWO, LVDS connector)
- Mating connector: LVDS P-TWO 187059-5122

1	Reserved	AUO Internal Use Only (NC)
2	Reserved	AUO Internal Use Only (NC)
3	Reserved	AUO Internal Use Only (NC)
4	Reserved	AUO Internal Use Only (NC)
5	Reserved (BITSEL)	NC or GND: 8 bit
6	Reserved (ROTATE)	High(3.3V) : Rotate enable(Data mirror) Open/Low(GND) : Normal
7	LVDS_SEL	Open/High(3.3V) for NS, Low(GND) for JEIDA
8	Reserved (DIM_IN)	Duty: TBD%~100% (0~3.3V) Frequency: 140~160Hz
9	Reserved (DIM_OUT)	Duty: TBD%~100% (0~3.3V) Frequency: 150Hz
10	Reserved (DCR_Enable)	Low(GND)/Open : DCR Function Disable(Bypass DIM_IN) High(3.3V) : DCR Function Enable
11	GND	Ground
12	CH1_0-	LVDS Channel 1, Signal 0-
13	CH1_0+	LVDS Channel 1, Signal 0+
14	CH1_1-	LVDS Channel 1, Signal 1-
15	CH1_1+	LVDS Channel 1, Signal 1+
16	CH1_2-	LVDS Channel 1, Signal 2-
17	CH1_2+	LVDS Channel 1, Signal 2+
18	GND	Ground
19	CH1_CLK-	LVDS Channel 1, Clock -
20	CH1_CLK+	LVDS Channel 1, Clock +
21	GND	Ground
22	CH1_3-	LVDS Channel 1, Signal 3-
23	CH1_3+	LVDS Channel 1, Signal 3+
24	Reserved	AUO Internal Use Only (NC)
25	Reserved	AUO Internal Use Only (NC)
26	NC	NC

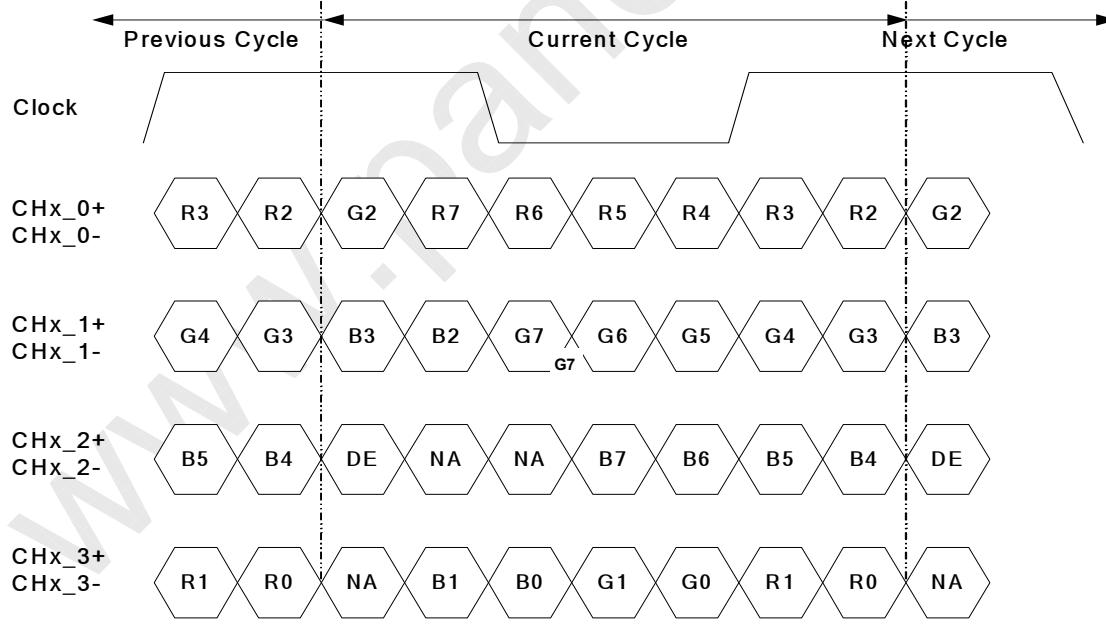


27	NC	NC
28	CH2_0-	LVDS Channel 2, Signal 0-
29	CH2_0+	LVDS Channel 2, Signal 0+
30	CH2_1-	LVDS Channel 2, Signal 1-
31	CH2_1+	LVDS Channel 2, Signal 1+
32	CH2_2-	LVDS Channel 2, Signal 2-
33	CH2_2+	LVDS Channel 2, Signal 2+
34	GND	Ground
35	CH2_CLK-	LVDS Channel 2, Clock -
36	CH2_CLK+	LVDS Channel 2, Clock +
37	GND	Ground
38	CH2_3-	LVDS Channel 2, Signal 3-
39	CH2_3+	LVDS Channel 2, Signal 3+
40	Reserved	AUO Internal Use Only (NC)
41	Reserved	AUO Internal Use Only (NC)
42	NC	NC
43	NC	NC
44	GND	Ground
45	GND	Ground
46	GND	Ground
47	NC	No connection
48	V _{DD}	Power Supply, +12V DC Regulated
49	V _{DD}	Power Supply, +12V DC Regulated
50	V _{DD}	Power Supply, +12V DC Regulated
51	V _{DD}	Power Supply, +12V DC Regulated

Note: N.C. : please leave this pin unoccupied. It can not be connected by any signal (Low/GND/High).

LVDS Option for 8 bit = High/Open→NS


Note: x = 1, 2, 3, 4...

LVDS Option = Low→JEIDA


Note: x = 1, 2, 3, 4...

3.3 Signal Timing Specification

This is the signal timing required at the input of the user connector. All of the interface signal timing should be satisfied with the following specifications for its proper operation.

Timing Table (DE only Mode) 1920x1080x50Hz/60Hz (AUO-12401, 12306K01)

Signal	Item	Symbol	Min.	Typ.	Max	Unit
Vertical Section	Period	Tv	1090	1125	1480	Th
	Active	Tdisp (v)	1080		Th	
	Blanking	Tblk (v)	10	45	400	Th
Horizontal Section	Period	Th	1030	1100	1325	Tclk
	Active	Tdisp (h)	960		Tclk	
	Blanking	Tblk (h)	70	140	365	Tclk
Clock	Frequency	Fclk=1/Tclk	50	74.25	82	MHz
Vertical Frequency	Frequency	Fv	47	60	63	Hz
Horizontal Frequency	Frequency	Fh	60	67.5	73	KHz

Notes:

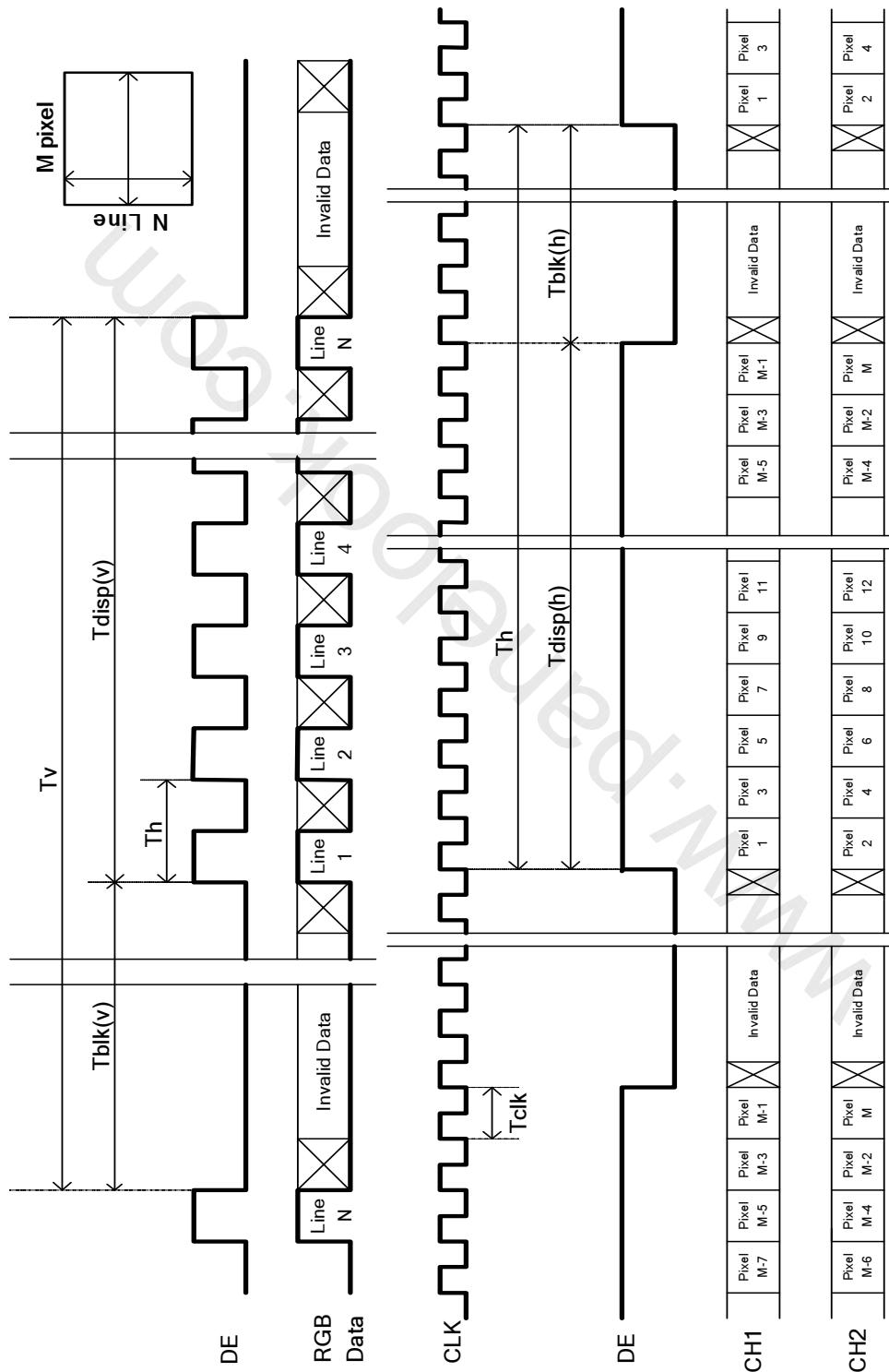
(1) Display position is specific by the rise of DE signal only.

Horizontal display position is specified by the rising edge of 1st DCLK after the rise of 1st DE, is displayed on the left edge of the screen.

(2) Vertical display position is specified by the rise of DE after a "Low" level period equivalent to eight times of horizontal period. The 1st data corresponding to one horizontal line after the rise of 1st DE is displayed at the top line of screen.

(3) If a period of DE "High" is less than 1920 DCLK or less than 1080 lines, the rest of the screen displays black.

(4) The display position does not fit to the screen if a period of DE "High" and the effective data period do not synchronize with each other.



3.4 Signal Waveforms 1920x1080x60Hz

3.5 Color Input Data Reference (LVDS Option for 8bit)

The brightness of each primary color (red, green and blue) is based on the 8 bit gray scale data input for the color; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

COLOR DATA REFERENCE

Color		Input Color Data																							
		RED								GREEN								BLUE							
		MSB				LSB				MSB				LSB				MSB				LSB			
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
R	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	RED(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(001)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

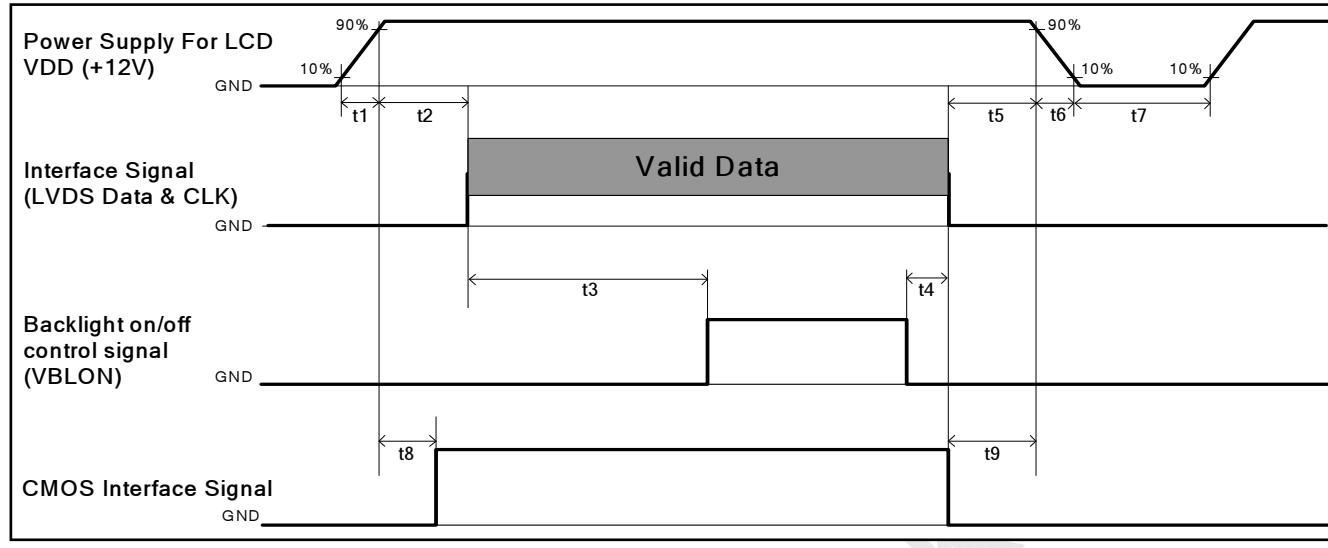
	RED(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0

	GREEN(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
B	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	BLUE(000)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

	BLUE(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
B	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

3.6 Power Sequence for LCD

3.6.1: 1920x1080x60Hz



3.6.1.1: 1366x768x60Hz, 1920x1080x60Hz or 120Hz or 240Hz (pure)

Parameter	Values			Unit
	Min.	Type.	Max.	
t1	0.4	---	30	ms
t2	0.1	---	50	ms
t3	450	---	---	ms
t4	0 ^{*1}	---	---	ms
t5	0	---	---	ms
t6	---	---	---	ms
t7	500	---	---	ms
t8	10	---	50	ms
t9	0	---	---	ms

Note:

- (1) t4=0 : concern for residual pattern before BLU turn off.
- (2) t6 : voltage of VDD must decay smoothly after power-off. (customer system decide this value)
- (3) When CMOS Interface is N.C. (no connection), opened in Transmitted end, T8 timing spec can be negligible

3.7 Backlight Specification (Inverter Type)

The backlight unit contains 10-l type CCFLs (Cold Cathode Fluorescent Lamp)

3.7.1: Normal Inverter Product Type

3.7.1.1 Electrical specification

	Item	Symbol	Condition	Spec			Unit	Note
				Min	Typ	Max		
1	Input Voltage	V _{DDB}	-	21.6	24	26.4	VDC	-
2	Input Current	I _{DDB}	V _{DDB} =24V	3.375	3.75	4.125	ADC	1
3	Input Power	P _{DDB}	V _{DDB} =24V	81	90	99	W	1
4	Inrush Current	I _{RUSH}	V _{DDB} =24V	-	-	6	ADC	2
5	On/Off control voltage	V _{BLON}	ON	V _{DDB} =24V	2	-	5.5	VDC
			OFF		0	-	0.8	
6	On/Off control current	I _{BLON}	V _{DDB} =24V	-	-	1.5	mA	-
7	Dimming Control Voltage	V _{DIM}	MAX	V _{DDB} =24V	3.0	-	3.3	VDC
			MIN		-	0	-	VDC
8	Dimming Control Current	I _{DIM}	V _{DDB} =24V	-	-	2	mADC	-
9	Internal Dimming Ratio	DIM_R	V _{DDB} =24V	10	-	100	%	3
10	External PWM Control Voltage	V _{EPWM}	MAX	V _{DDB} =24V	2	-	3.3	VDC
			MIN	V _{DDB} =24V	0	-	0.8	
11	External PWM Control Current	I _{EPWM}	V _{DDB} =24V	-	-	2	mADC	-
12	External PWM Duty ratio	D _{EPWM}	V _{DDB} =24V	10	-	100	%	3
13	External PWM Frequency	F _{EPWM}	V _{DDB} =24V	140	180	240	Hz	-

%)

Note 3 : LGE <40" model

For External PWM application, $\geq 5\%$ dimming is function well and no backlight shutdown.

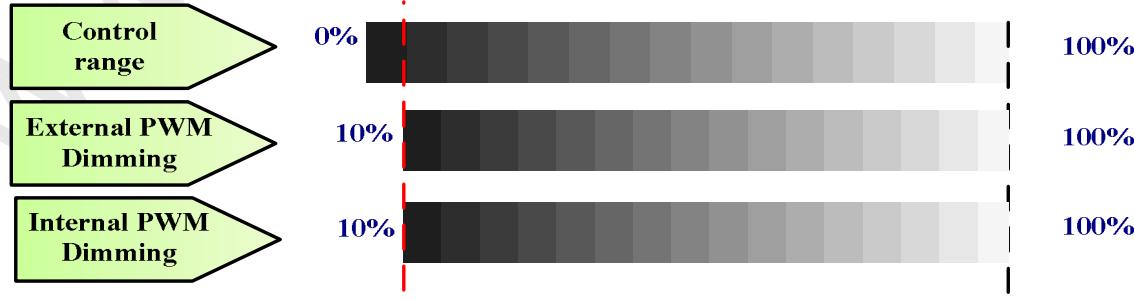
Note 1 : Dimming ratio = 100% (MAX) (Ta = 25±5°C, Turn on for 45 minutes)

Note 2 : Measurement condition Risetime = 20ms (VDDB : 10% ~90

3.7.1.2 Input Pin Assignment

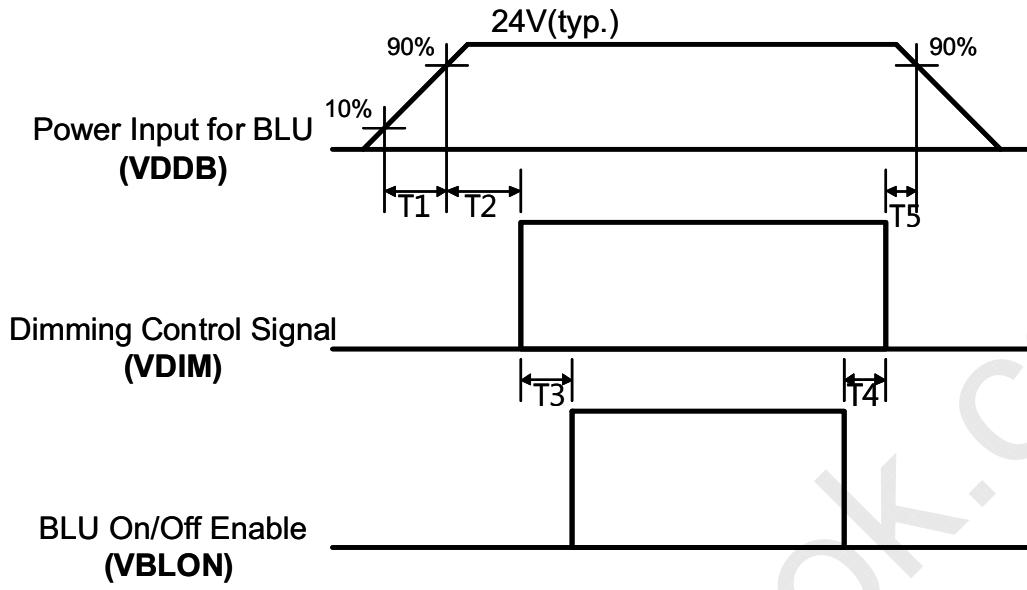
CN3: CI0114M1HRL-NH (Cvilux)

Pin	Symbol	Description
1	VDDB	Operating Voltage Supply, +24V DC regulated
2	VDDB	Operating Voltage Supply, +24V DC regulated
3	VDDB	Operating Voltage Supply, +24V DC regulated
4	VDDB	Operating Voltage Supply, +24V DC regulated
5	VDDB	Operating Voltage Supply, +24V DC regulated
6	BLGND	Ground and Current Return
7	BLGND	Ground and Current Return
8	BLGND	Ground and Current Return
9	BLGND	Ground and Current Return
10	BLGND	Ground and Current Return
11	DET	BLU status detection: Normal : 0~0.8V ; Abnormal : Open collector
12	VBLON	BLU On-Off control: BL On : High/Open (2V~5.5V); BL off : Low (0~0.8V/GND)
13	VDIM	Internal PWM (0~3.3V for 10~100% Duty, open for 100%) < NC ; at External PWM mode>
14	PDIM	External PWM (10%~100% Duty, open for 100%) < NC ; at Internal PWM mode>

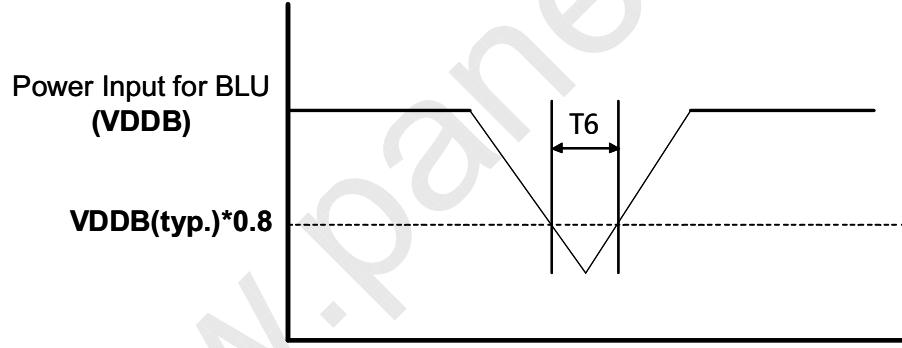


PWM Dimming : include Internal and External PWM Dimming

3.7.1.3 Power Sequence for Backlight (CCFL and LED)



Dip condition for Inverter

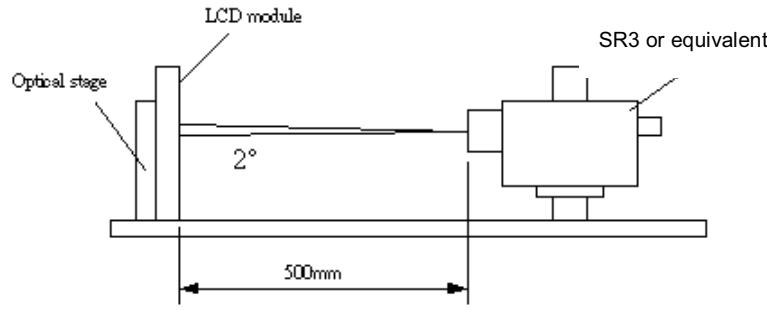


Parameter	Value			Units
	Min	Typ	Max	
T1	20	-	-	ms
T2	500	-	-	ms
T3 (Normal)	250	-	-	ms
T4	0	-	-	ms
T5	1	-	-	ms
T6	-	-	10	ms

4. Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 45 minutes in a dark environment at 25°C. The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of φ and θ equal to 0°.

Fig.1 presents additional information concerning the measurement equipment and method.



Parameter	Symbol	Values			Unit	Notes
		Min.	Typ.	Max		
Contrast Ratio	CR	3200	4000	--		1
Surface Luminance (White)	L_{WH}	320	400	--	cd/m ²	2
Luminance Variation	$\delta_{WHITE(0P)}$	--	--	1.33		3
Response Time (G to G)	T_y	--	6.5	--	ms	4
Color Gamut	NTSC		72		%	
Color Coordinates						
Red	R_x		0.64			
	R_y		0.33			
Green	G_x		0.29			
	G_y		0.60			
Blue	B_x	Typ.-0.03	0.15	Typ.+0.03		
	B_y		0.06			
White	W_x		0.280			
	W_y		0.290			
Viewing Angle						5
x axis, right($\varphi=0^\circ$)	θ_r	--	89	--	degree	
x axis, left($\varphi=180^\circ$)	θ_l	--	89	--	degree	
y axis, up($\varphi=90^\circ$)	θ_u	--	89	--	degree	
y axis, down ($\varphi=270^\circ$)	θ_d	--	89	--	degree	

Note:

1. Contrast Ratio (CR) is defined mathematically as:

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance of } L_{on5}}{\text{Surface Luminance of } L_{off5}}$$

2. Surface luminance is luminance value at point 5 across the LCD surface 50cm from the surface with all pixels displaying white. From more information see FIG 2. When lamp current $I_H = 11\text{mA}$. $L_{WH}=L_{on5}$ where L_{on5} is the luminance with all pixels displaying white at center 5 location.

3. The variation in surface luminance, δ_{WHITE} is defined (center of Screen) as:

$$\delta_{WHITE(9P)} = \text{Maximum}(L_{on1}, L_{on2}, \dots, L_{on9}) / \text{Minimum}(L_{on1}, L_{on2}, \dots, L_{on9})$$

4. Response time T_γ is the average time required for display transition by switching the input signal for five luminance ratio (0%, 25%, 50%, 75%, 100% brightness matrix) and is based on $F_v=60\text{Hz}$ to optimize.

Measured Response Time		Target				
		0%	25%	50%	75%	100%
Start	0%	0% to 25%	0% to 50%	0% to 75%	0% to 100%	
	25%	25% to 0%	25% to 50%	25% to 75%	25% to 100%	
	50%	50% to 0%	50% to 25%	50% to 75%	50% to 100%	
	75%	75% to 0%	75% to 25%	75% to 50%		75% to 100%
	100%	100% to 0%	100% to 25%	100% to 50%	100% to 75%	

The response time is defined as the following figure and shall be measured by switching the input signal for "any level of grey(bright) " and "any level of gray(dark)".

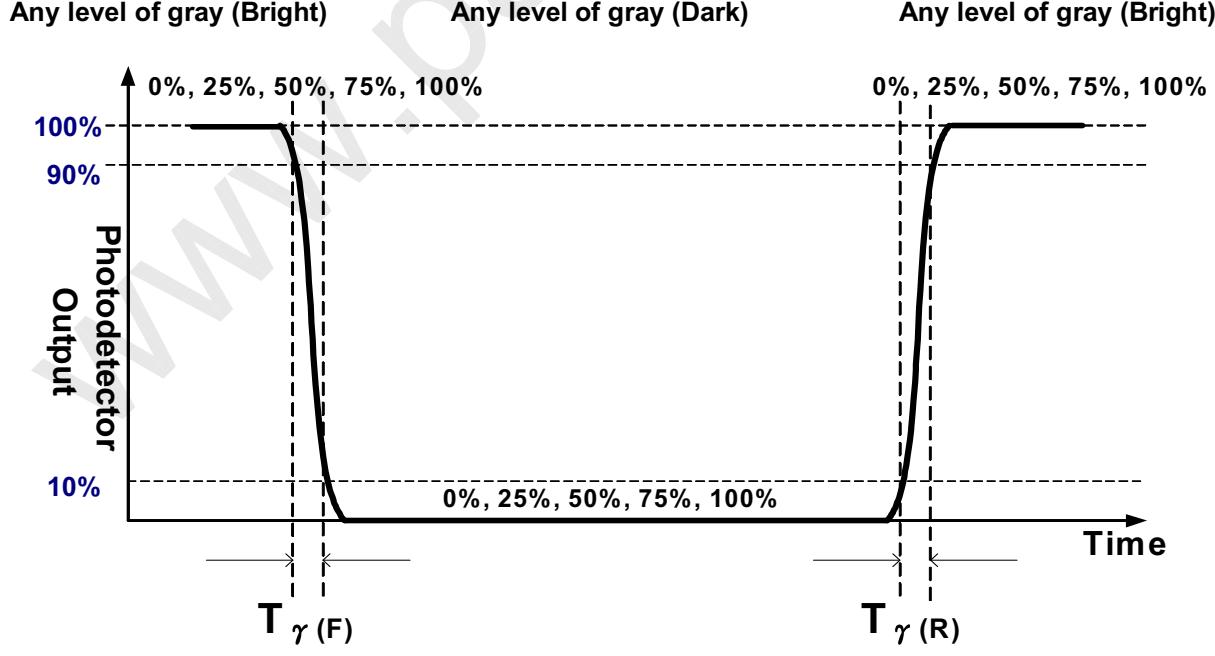
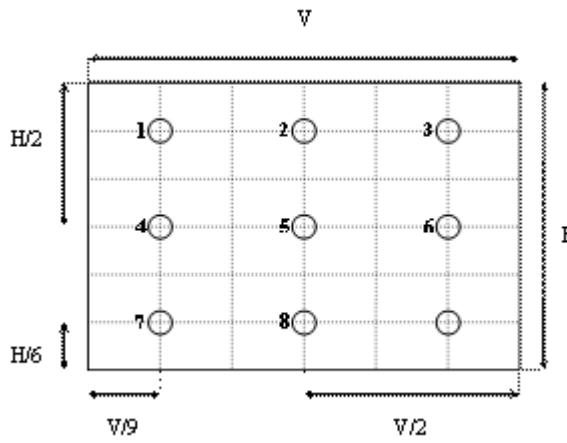
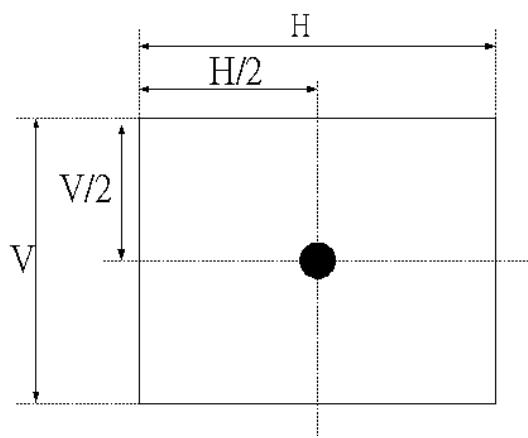
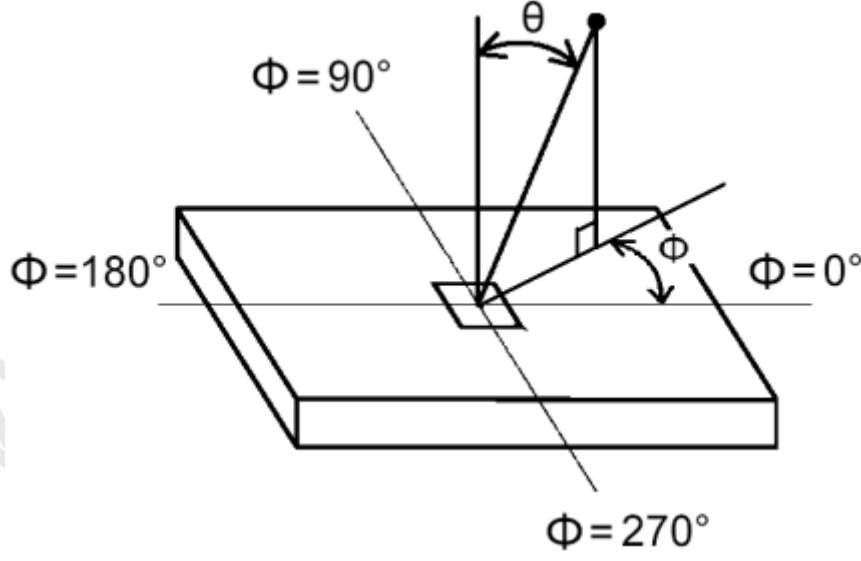


FIG. 2 Luminance



5. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG3.

FIG.3 Viewing Angle

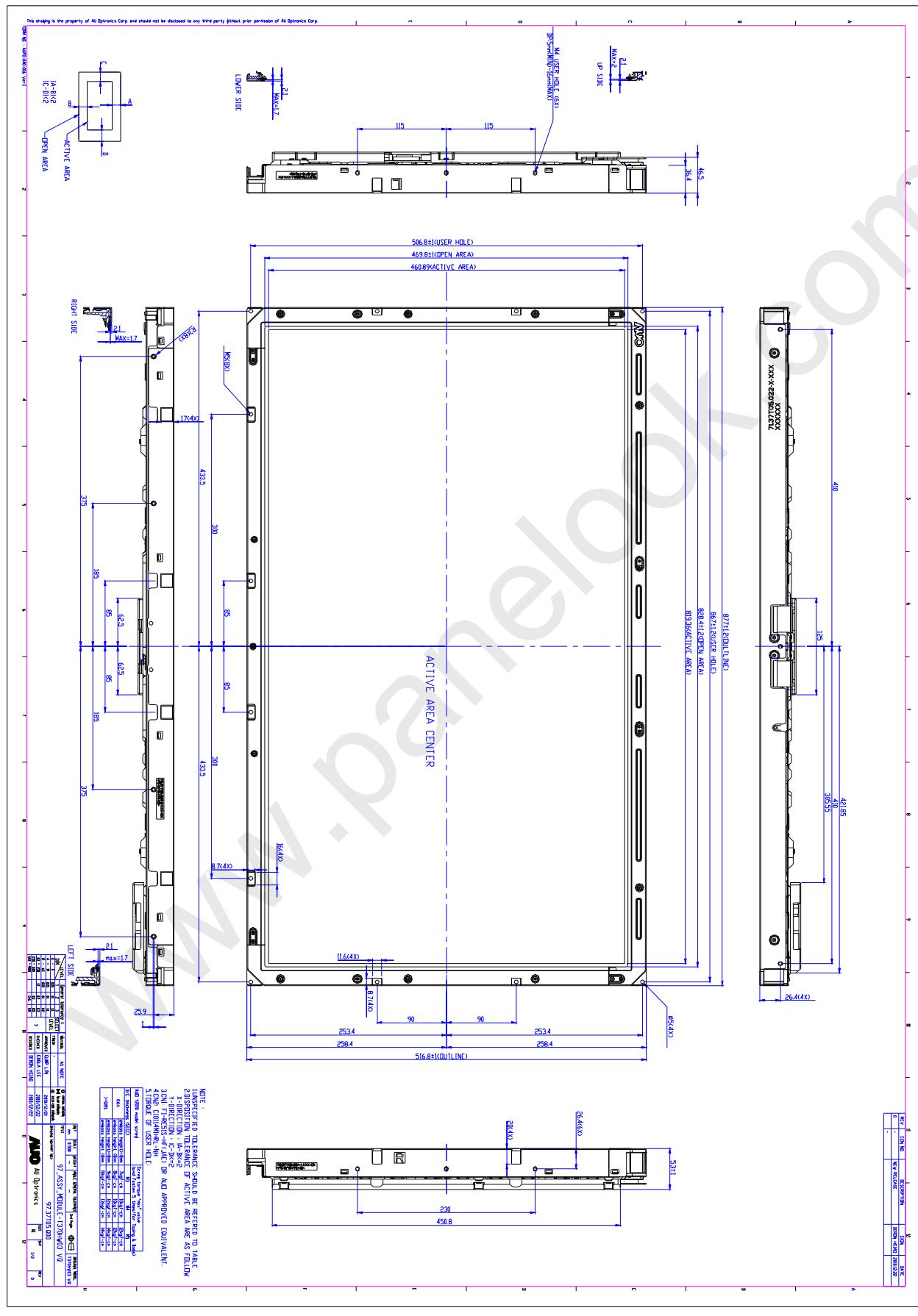


5. Mechanical Characteristics

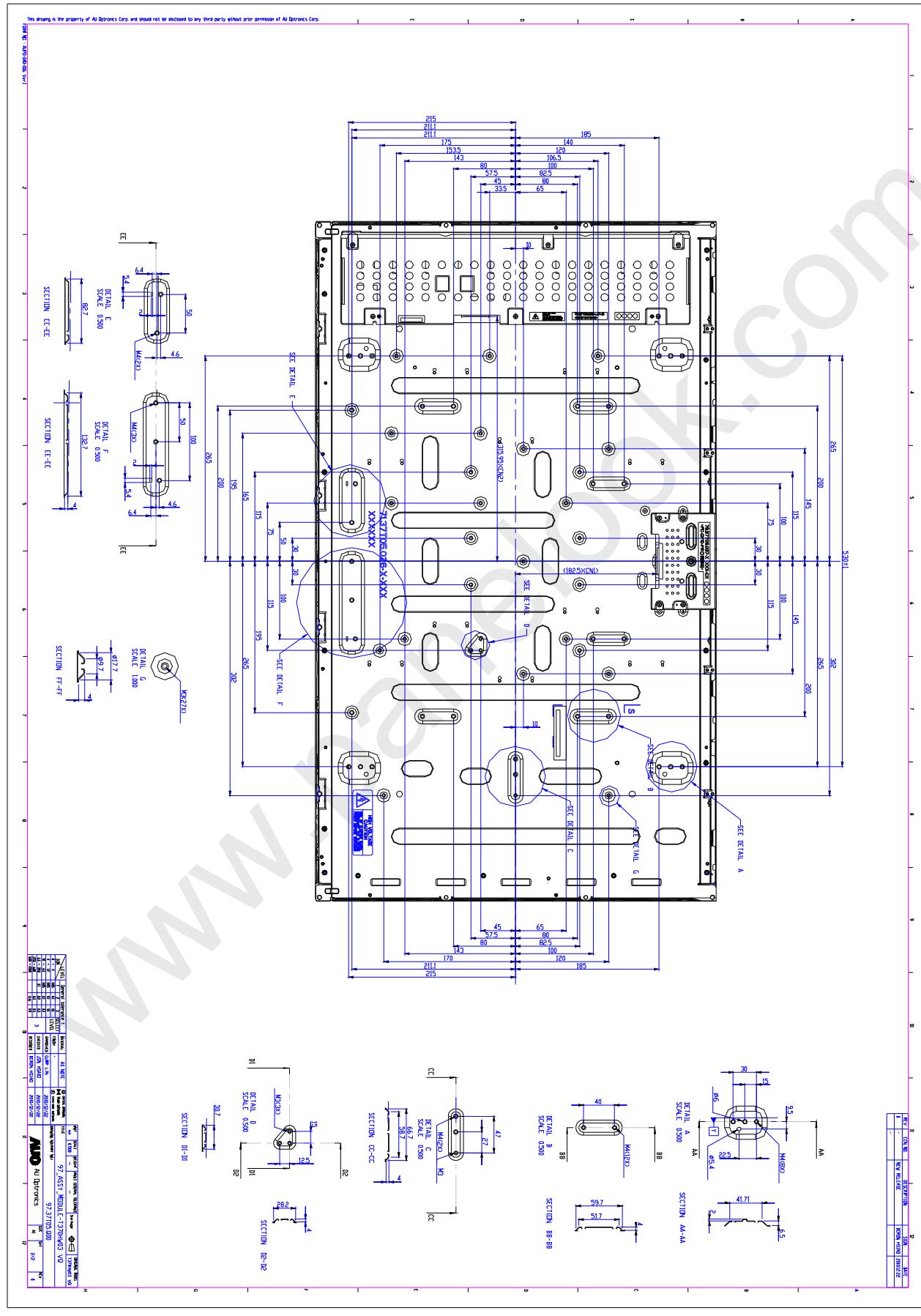
The contents provide general mechanical characteristics for the model T370HW03 VQ. In addition the figures in the next page are detailed mechanical drawing of the LCD.

Item	Dimension	Unit	Note
Outline Dimension	Horizontal	877	mm
	Vertical	516.8	mm
	Depth (Dmin)	36.4	mm to rear
	Depth (Dmax)	53.0	mm to inverter cover
Weight	6.5	Kg	

Front View



Back View



6. Reliability Test Items

	Test Item	Q'ty	Condition
1	High temperature storage test	3	60°C, 300hrs
2	Low temperature storage test	3	-20°C, 300hrs
3	High temperature operation test	3	50°C, 300hrs
4	Low temperature operation test	3	-5°C, 300hrs
5	Vibration test (non-operation)	3	Wave form: random Vibration level: 1.5G RMS Bandwidth: 10-300Hz, Duration: X, Y, Z 30min One time each direction
6	Shock test (non-operation)	3	Shock level: 50G Waveform: half sine wave, 11ms Direction: ±X, ±Y, ±Z, One time each direction
7	Vibration test (With carton)	5	Random wave (1.5G RMS, 10-200Hz) 30mins/ Per each X,Y,Z axes
8	Drop test (With carton)	5	Height: 305mm (ASTMD4169-I) 1 corner, 3 edges, 6 surfaces (refer ASTM D 5276)

7. International Standard

7.1 Safety

- (1) UL 60950-1, UL 60065; Standard for Safety of Information Technology Equipment Including electrical Business Equipment.
- (2) IEC 60950-1 : 2001, IEC 60065:2001 ; Standard for Safety of International Electrotechnical Commission
- (3) EN 60950 : 2001+A11, EN 60065:2002+A1:2006; European Committee for Electrotechnical Standardization (CENELEC), EUROPEAN STANDARD for Safety of Information Technology Equipment Including Electrical Business Equipment.

7.2 EMC

- (1) ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electrical Equipment in the Range of 9kHz to 40GHz." American National standards Institute(ANSI), 1992
- (2) C.I.S.P.R "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." International Special committee on Radio Interference.
- (3) EN 55022 "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." European Committee for Electrotechnical Standardization. (CENELEC), 1998

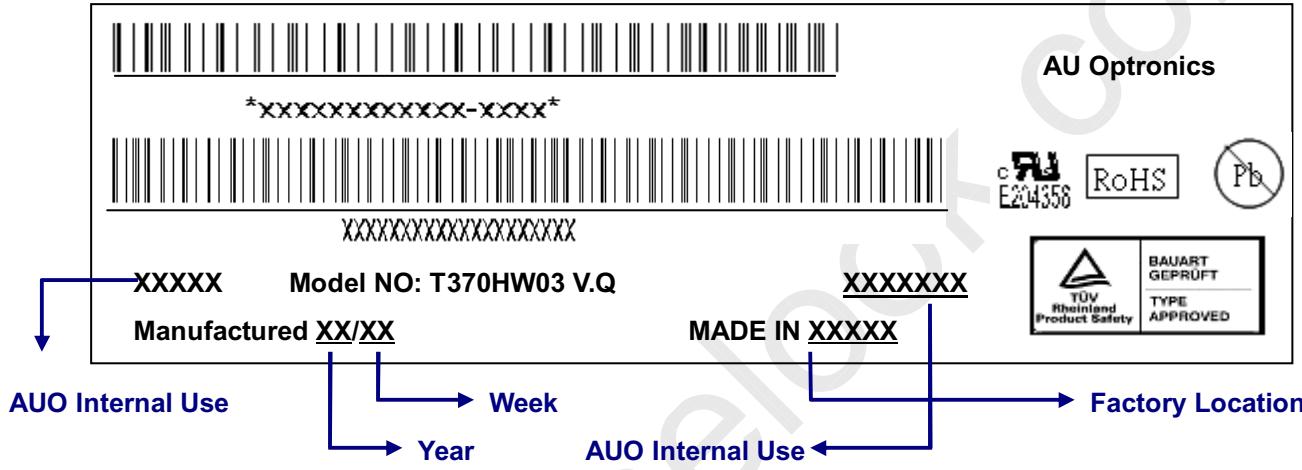


8. Packing

8-1 DEFINITION OF LABEL:

A. Panel Label:

xxxxxxxxxxxx-xxxx
 ↓
 Panel Unique ID → AUO Internal Use

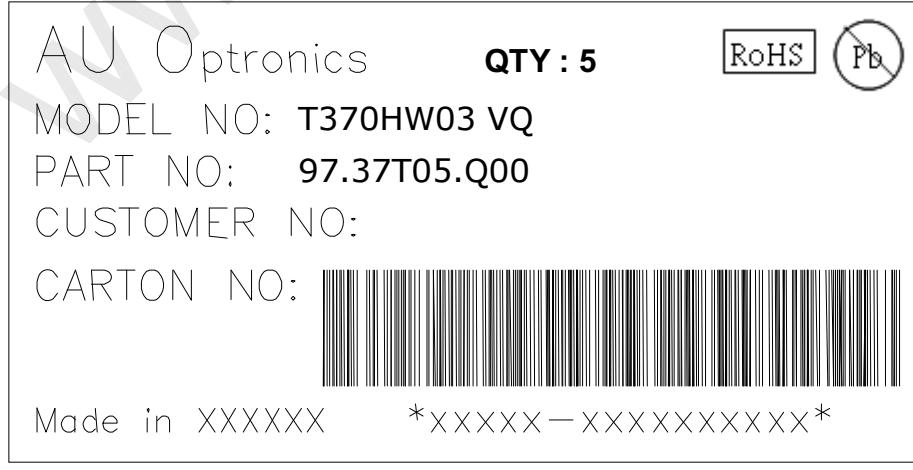


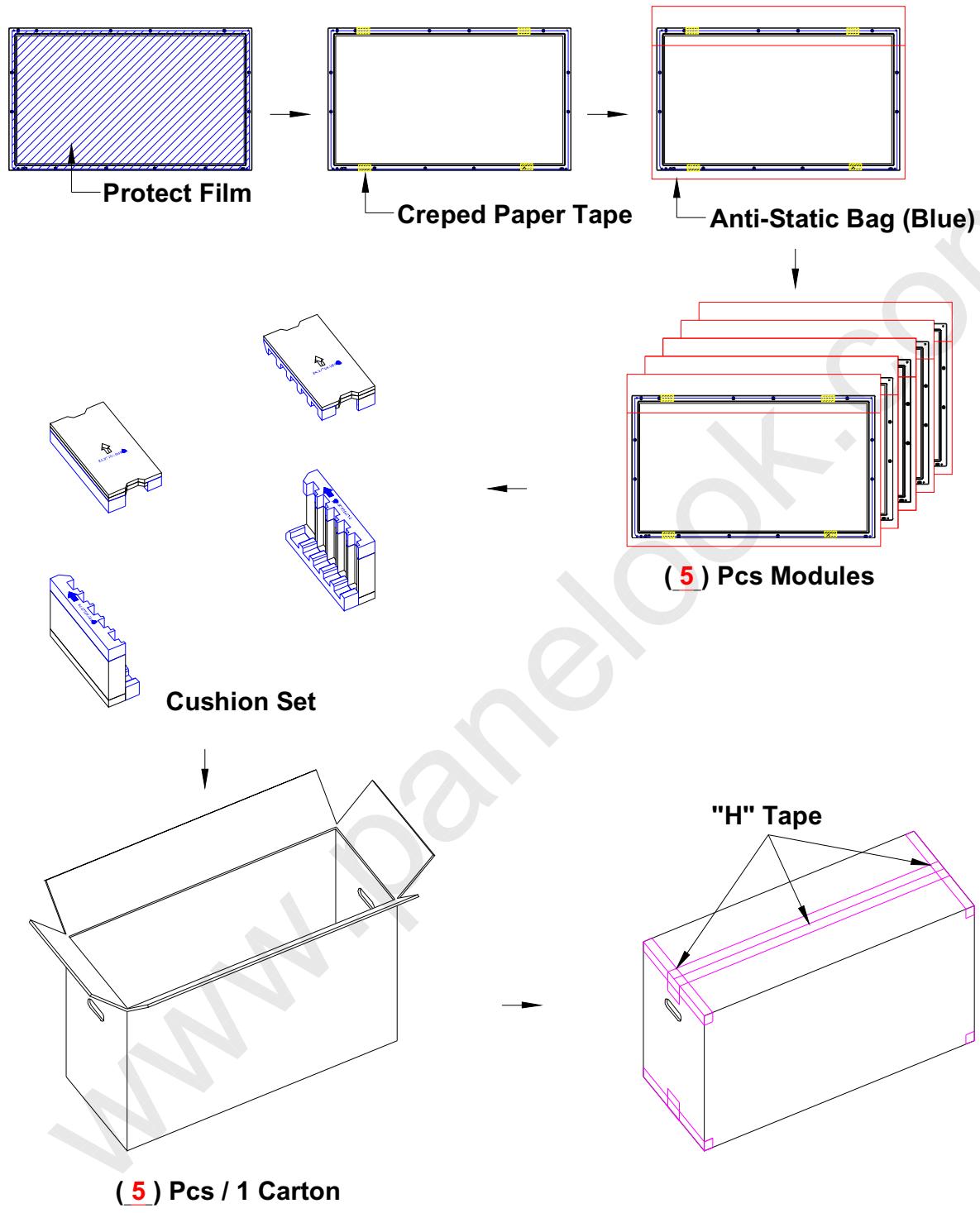
Green mark description

- (1) For Pb Free Product, AUO will add for identification.
- (2) For RoHS compatible products, AUO will add for identification.

Note: The green Mark will be present only when the green documents have been ready by AUO internal green team.
 (definition of green design follows the AUO green design checklist.)

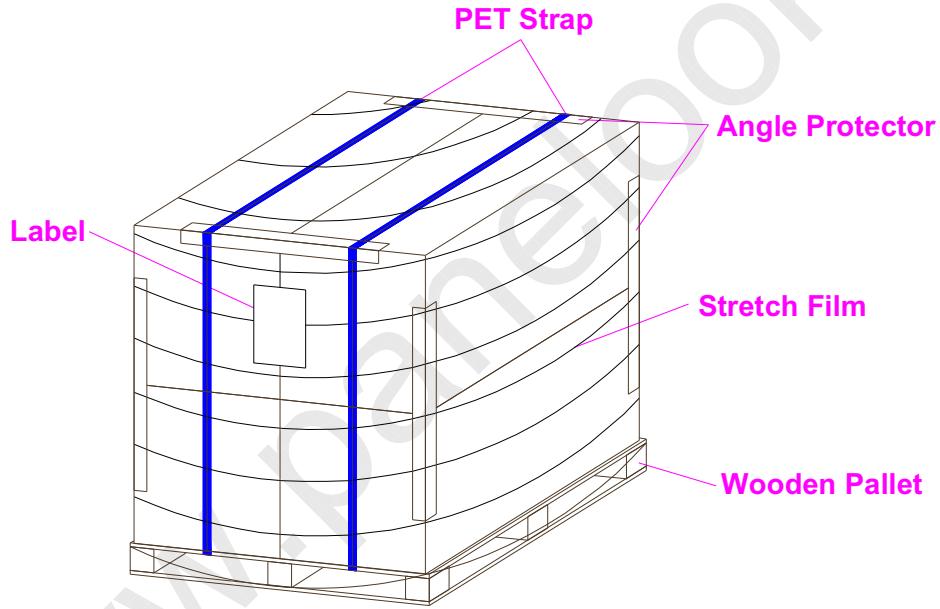
B. Carton Label:



8-2 PACKING METHODS:

8-3 Pallet and Shipment Information

	Item	Specification			Packing Remark
		Qty.	Dimension	Weight (kg)	
1	Packing BOX	5pcs/box	965(L)*375(W)*610(H)	36	
2	Pallet	1	1150(L)*980(W)*132(H)	15	
3	Boxes per Pallet		6 boxes/pallet		
4	Panels per Pallet		30 pcs/pallet		
	Pallet after packing	30	1150(L)*980(W)*1352(H)	232	



9. PRECAUTIONS

Please pay attention to the followings when you use this TFT LCD module.

9-1 MOUNTING PRECAUTIONS

- (1) You must mount a module using holes arranged in four corners or four sides.
- (2) You should consider the mounting structure so that uneven force (ex. twisted stress) is not applied to module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.
- (3) Please attach the surface transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to resist external force.
- (4) You should adopt radiation structure to satisfy the temperature specification.
- (5) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter cause circuit broken by electro-chemical reaction.
- (6) Do not touch, push or rub the exposed polarizer with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of polarizer for bare hand or greasy cloth. (Some cosmetics are detrimental to the polarizer.)
- (7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front/ rear polarizer. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.
- (8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (9) Do not open the case because inside circuits do not have sufficient strength.

9-2 OPERATING PRECAUTIONS

- (1) The device listed in the product specification sheets was designed and manufactured for TV application
- (2) The spike noise causes the mis-operation of circuits. It should be lower than following voltage:
 $V=\pm 200mV$ (Over and under shoot voltage)
- (3) Response time depends on the temperature. (In lower temperature, it becomes longer..)
- (4) Brightness of CCFL depends on the temperature. (In lower temperature, it becomes lower.) And in lower temperature, response time (required time that brightness is stable after turned on) becomes longer.
- (5) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (6) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (7) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interface.

9-3 ELECTROSTATIC DISCHARGE CONTROL

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wristband etc. And don't touch interface pin directly.

9-4 PRECAUTIONS FOR STRONG LIGHT EXPOSURE

Strong light exposure causes degradation of polarizer and color filter.

9-5 STORAGE

When storing modules as spares for a long time, the following precautions are necessary.

- (1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5°C and 35°C at normal humidity.
- (2) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

9-6 HANDLING PRECAUTIONS FOR PROTECTION FILM

- (1) The protection film is attached to the bezel with a small masking tape. When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.
- (2) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the bezel after the protection film is peeled off.
- (3) You can remove the glue easily. When the glue remains on the bezel or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.